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| 10/543,173 | 07/22/2005 | Masaki Yamada | 274300US2PCT | 7941 |
| 22850 7590 07/22/2010 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | | |
| EXAMINER CAVALLARI, DANIEL J | | | | |
| ART UNIT 2836 | | PAPER NUMBER | | |
| NOTIFICATION DATE 07/22/2010 | | DELIVERY MODE ELECTRONIC | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/543,173

Applicant(s)

YAMADA ET AL.

Examiner

DANIEL CAVALLARI

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-12 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) 1, 4-12 and 15-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-22 is/are allowed.
- 6) ☒ Claim(s) 18 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The Examiner acknowledges the amendments submitted 5/3/2010. The amendments to claim 1, 5, 7, 11, 12, 19; cancellation of claims 2,3,13, and 14; and new claims 20-22 are accepted. However, claims 7 and 12 now depend on cancelled claim 3.

Election/Restrictions

Newly amended claim 1 is directed to an invention that lacks the same or corresponding special technical feature from the invention originally claimed for the following reasons:

The special technical feature of claim 1 (as illustrated in Figure 7) is the particular configuration and connection of the converters (4 and 5) between the AC source (1) and load (2). Here, in newly amended claim 1, the first single phase inverter or rectifier is NOT connected in parallel with the series connection of the power source and the straightforward switch (3), as was previously claimed before the amendment.

The special technical feature of independent claims 18, 20 and 21 is the particular and different configuration (as shown in Figure 1) and connection of the converters (4 and 5) between the AC source (1) and load (2) and particularly, the first single phase inverter or rectifier connected in parallel with the series connection of the power source and the straightforward switch.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 1, 4-12, and 15-17 are withdrawn from

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consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

The previously made 112, second paragraph rejection of claims 5, 11, 12, and 19 are withdrawn in view of the amendments.

Applicant's arguments filed 5/3/2010 in regard to the 103 combination of Lin and Suzuki have been fully considered but they are not persuasive.

Particularly, Applicant argues "Suzuki, which is cited to disclose a DC-DC converter for example in Figure 5, merely discloses a DC-DC converter connected to a transformer 2." This description of Suzuki is incorrect. Figure 5 of Suzuki discloses more than a DC-DC converter and transformer and in fact discloses a Battery (B) connected to the DC-DC converter wherein the DC-DC converter is connected to a converter (2) (noting that said converter comprises a transformer). Suzuki illustrates the well known and common configuration of providing a DC-DC converter between a battery (or other DC power source) and an output, in this case a converter. This circuitry (battery and Dc-Dc converter configuration) is directly applicable to Lin who teaches a battery source connected between converters (ie. 21, 22, fig1). The motivation for such a combination would have been to provide the requisite voltage at the battery since batteries come in various voltages.

Claim Objections

Claims 7 and 12 are objected to because of the following informalities:

In regard to claims 7 and 12

Claims 7 and 12 depend on cancelled claim 3.

Claims 7 and 12 will be examined as best understood as dependent on claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (Lin) US 2005/0116547 in view of Shirahama et al. (Shirahama) US 5,115,386, and Suzuki et al. (Suzuki) US 2004/0066094.

In regard to Claim 18

Lin teaches:

A power supply apparatus comprising:

a straightforward switch (43, see fig2) connected in series (noting 43 supplying power with switch 51 and 56 open) between a power source (INPUT AC VOLTAGE) and a load (output of 40, see fig2 and 5), and that supplies or interrupts an electric power output from the power source to the load;

a first inverter or rectifier (11, 12, fig2) connected in parallel with the series connection of the power source and the straightforward switch;

a second single phase inverter or rectifier (21, 22) connected in series with said load

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(connected in series when switches 43, 52, and 54 are open and 53 and 55 are closed, see fig2) ; and

a battery (30) connected to direct current side terminals (read on by the connection points of the battery line to the inverter or rectifiers) of said first and second single phase inverters or rectifiers;

wherein said first and second single inverters or rectifiers are connected **so as to be connected** in series with each other (noting with a failure of 21 and 12, the first and second inverters or rectifiers are connected so as to be connected in series with 11 feeding 22) when said straightforward switch (43) is open to thereby each supply their respective electric powers to the load by each supplying their respective output voltages to the load (noting that in a series connection, each of 11 and 22 supply their output power to the load).

Lin fails to explicitly teach the use of “single phase inverter or rectifier” and is in fact silent in regard to the number of phases in the power supply apparatus.

However, Shirahama teaches a single phase power supply apparatus comprising a single phase inverter (see column 12, lines 52-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a single phase power supply apparatus with Lin as taught by Shirahama. The motivation would have been to provide a single phase power supply system since single phase power is widely used and needed and since single phase power production is known and widely used in the art.

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Incorporating all arguments above in regard to the power supply apparatus taught by Lin, Lin teaches batteries directly connected to the rectifiers or inverters and fails to teach an intervening dc/dc converter.

Suzuki teaches a power supply apparatus wherein a bi-directional dc/dc converter is used to connect a battery to an inverter (see fig5) thereby give and receive energy through the DC-DC converter (noting the battery is giving and receiving between both inverters or rectifiers of Lin since it is connected between them). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the dc/dc converter between the battery and other components as taught by Suzuki into the apparatus of Lin. The motivation would have been to provide the proper operating voltage and further provide additional conversion capabilities for cleaner power.

Allowable Subject Matter

Claims 20-22 are allowed for reasons indicated in the office action of 10/29/2009.

Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

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In regard to claim 19

The claims in the application are deemed to be directed to an nonobvious improvement over the prior art, particularly over Lin et al. (Lin) US 2005/00116547 and Suzuki et al. (Suzuki) US2004/0066094. The primary reason for allowance of the claims is the inclusion of the particular pseudo-sinusoidal voltage waveform output to the load after a decrease in a system voltage and opening of the straightforward switch. Although Suzuki teaches the use of square waves in producing a desired output voltage (see Suzuki Figures 15 and 16), it would not have been obvious or capable to combine the pseudo-sinusoidal voltage waveform output with the converter structure taught by Lin (noting Lin is the primary reference that teaches the particular converter structure claimed in independent claim 18).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Cavallari whose telephone number is 571-272-8541. The examiner can normally be reached on Monday-Thursday 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached at (571)272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel Cavallari/

July 7, 2010

/Jared J. Fureman/
Supervisory Patent Examiner, Art Unit 2836